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RC959-4FE16E1 Configuration Guide

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We hope to hear from you!

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Release Notes

Date of Release	Manual Version	Software Version	Revisions
20080423	200803	1.0.0	First draft

Preface

Version

Software version: 1.0.0

About This Manual

This document is for technicians who have the professional knowledge of configuring RC959-4FE16E1 device. It introduces the principle and features of the function modules of RC959-4FE16E1 device and gives the configuration guides of these modules.

Relevant manuals

《RC959-4FE16E1 User Manual》

《RC959-4FE16E1 Commands Notebook》

《RC959-4FE16E1 Configuration Guide》

《RC959-4FE16E1 EMS User Manual》

This document is 《RC959-4FE16E1 Configuration Guide》.

Organization

The manual is composed of the following 10 chapters:

Chapter 1 Overview

This chapter briefly summarizes the function features of the RC959-4FE16E1 devices.

Chapter 2 How to Use the Command Lines

This chapter introduces the method of configuring RC959-4FE16E1 using command lines.

Chapter 3 System Command Configuration

This chapter introduces the function and configuration method of RC959-4FE16E1 system commands.

Chapter 4 E1 Interface Configuration

The chapter introduces the configuring method and commands line of the E1 interface on the device.

Chapter 5 Ethernet Interface Configuration

The chapter introduces the configuring method and commands line of the Ethernet interface on the device.

Chapter 6 SFP Interface Configuration

The chapter introduces the configuring method and commands line of the SFP interface on the device.

Chapter 7 EOPDH Configuration

The chapter introduces the configuring method and commands line of the EOPDH interface on the device.

Chapter 8 Transfer Commands Configuration

This chapter introduces how to configure the transfer commands on the device.

Chapter 9 Network Protocol Configuration

This chapter introduces the network protocol function and how to configure it.

Chapter 10 Typical Applications



Chapter 1 System Overview

The RC959-4FE16E1 device is a new independence developed device of Raisecom which maps Ethernet frame to 16xE1/T1/J1.

By the RS232 serial interface and network management interface to log on SNMP software, users can configure and manage RC959-4FE16E1 and on line upgrade is available.

This type of device is in support of below features:

- Support protocol converter from Ethernet to E1;
- 16 inverse multiplex channels are available;
- In support of LCAS function of virtual concatenation group;
- GFP encapsulation format;
- 802.1Q and double tag are available.

Chapter 2 How to Use the Command Line

2.1 Software and hardware environment

Hardware environment: RC959-4FE16E1 device platform

PC serial port

Software environment: WIN98/WIN2000/WINDOWS XP

2.2 Command line mode

User EXEC mode	
Privileged EXEC mode	<p>Using the command enable under the user EXEC mode, users can enter the privileged EXEC mode.</p> <p>Using the command disable under the privileged EXEC mode, users can return to the user EXEC mode.</p>
Config mode	<p>Using the command config under the privileged EXEC mode, users can enter the config mode.</p> <p>Using the command exit under the config mode, users can return to the privileged EXEC mode.</p>
Interface snmp mode	<p>Using the command interface snmp under the config mode, users can enter the interface snmp mode.</p> <p>Using the command exit under the interface snmp mode, users can return to the config mode.</p>
Slot mode	<p>Using the command slot 0 under the config mode, users can enter the slot mode.</p> <p>Using the command exit under the slot mode, users can return to the config mode.</p>
Interface e1 mode	<p>Using the command interface e1 under the slot mode or remote mode, users can enter the interface e1 mode.</p> <p>Using the command exit under the interface e1 mode, users can return to the slot mode or remote mode.</p>
Interface eth mode	<p>Using the command interface eth under the slot mode or remote mode, users can enter the interface eth mode.</p> <p>Using the command exit under the interface eth mode, users can</p>

	return to the slot mode or remote mode .
Interface fx-eth mode	Using the command interface fx-eth under the slot mode or remote mode , users can enter the interface fx-eth mode . Using the command exit under the interface fx-eth mode , users can return to the slot mode or remote mode .
Interface sfp mode	Using the command interface sfp fx-eth under the slot mode or remote mode , users can enter the interface sfp mode . Using the command exit under the interface sfp mode , users can return to the slot mode or remote mode .
Interface eopif mode	Using the command interface eopif under the slot mode or remote mode , users can enter the interface eopif mode . Using the command exit under the interface eopif mode , users can return to the slot mode or remote mode .
Remote mode	Using the command remote 0 <1-16> under the config mode , users can enter the remote mode . Using the command exit under the remote mode , users can return to the config mode .

2.3 Getting help

Command	Function Description
help	Obtaining a brief description (in Chinese or English) from the help system.
abbreviated-command-entry ?	Obtaining a list of commands that begin with a specified string (abbreviated-command-entry): Example: Iscom> en? Enable
abbreviated-command-entry<Tab>	Supplementing an unfinished command line. Example: Iscom # show ver <TAB> Iscom # show version
?	List all commands of the current mode. Example: Iscom #?
command ?	List all keywords and optional items for a specified

	command line and give brief help information of the command line. Example: Iscom #show ?
--	--

2.4 Displaying historical commands

By default, 20 pieces of historical commands will be temporarily saved in the buffer of the system. Users can set up the number of historical commands to be saved using the command line:

```
raisecom# terminal history <0-20>
```

Users can also use the command **history** to display all historical commands.

2.5 Properties of editing

- <up arrow>: the command last entered
- <down arrow>: the command entered next
- <left arrow>: move left by a character
- <right arrow>: move right by a character
- <Backspace>: delete the character before the cursor
- <CTRL+d>: delete the character after the cursor
- <CTRL+a>: move the cursor to the head of the row
- <CTRL+e>: move the cursor to the tail of the row
- <CTRL+k>: delete all the characters after the cursor
- <CTRL+x>: delete all the characters left to the cursor
- <CTRL+z>: quit the current unprivileged user mode and enter Privileged EXEC mode.

Chapter 3 System Command Configuration

3.1 Basic system commands and configurations

- clear** Clear the information on the screen.
- list** List all commands of the current mode.

3.2 The management of configuration file and startup file

3.2.1 Configuration file

- The name of the default configuration file of the current system is: "startup_config.conf";
- The configuration file can be written into the flash file system using the command **write**. When restart the system, the configuration information written in the system will be configured automatically.
- User can use the command **erase** to delete the configuration file.

3.2.2 System file

- Same as program file. The name of the program file of the current system is: "RC959-4FE16E1.Z";
- Program file can be downloaded to the system via FTP/TFTP protocols using the command **download** and can also be uploaded to the server via TFTP/FTP protocols;
- Command **dir** can be used to view files in flash file system;
- The version information of the program file will be shown using the command **show version**.

3.3 User management

Default user name: raisecom

Default password: raisecom

To add a new user in the privileged EXEC mode, please follow the steps in the table below:

Step	Command	Description
1	user <i>USERNAME password PASSWORD</i>	<i>USERNAME</i> : the user name Password: keyword of the user password <i>PASSWORD</i> : password information
2	user <i>USERNAME privilege <1-15></i>	<i>USERNAME</i> : the user name <i>Privilege</i> : keyword of privilege <i><1-15></i> : user privilege
3	write	Save the configuration information

4	show user	Show user information
---	------------------	-----------------------

Chapter 4 E1 Interface Configuration

Configurations of E1 interface function:

- ✧ Set the E1 interface BERT switch (bert (enable|disable))
- ✧ Clear E1 performance statistic (clear statistic)
- ✧ Set E1 interface loop back (e1-loopback (internal|external)) mode
- ✧ Open/shutdown E1 interface ([no] shutdown)
- ✧ Monitor and maintenance of E1 interface

4.1 Set the E1 interface BERT switch

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface e1 <1-16>	Enter E1 interface configuration mode
4	bert (enable disable)	Set E1 interface BERT switch
5	show interface	Show interface configuration

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface e1 1**

Raisecom(config-e1/0/1)# **bert enable**

Set successfully

Raisecom(config-e1/0/1)#

4.2 Clear E1 performance statistic

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface e1 <1-16>	Enter E1 interface configuration mode
4	clear statistic	Clear E1 interface performance statistic

5	show interface	Show interface configuration
---	----------------	------------------------------

This command can only clear the current statistic data, the history statistic data won't be cleared by this command.

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface e1 1**

Raisecom(config-e1/0/1)# **clear statistic**

Set successfully

Raisecom(config-e1/0/1)#

4.3 Set E1 interface loop back mode

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface e1 <1-16>	Enter E1 interface configuration mode
4	e1-loopback (internal/external)	Configure the loop back mode of E1 interface
5	show interface	Show interface configuration

E1 interface can be configured to internal loop back or external loop back. Use the command of **no e1-loopback** can cancel loop back of E1 interface.

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface e1 1**

Raisecom(config-e1/0/1)# **e1-loopback external**

Set successfully

Raisecom(config-e1/0/1)#

4.4 Open/shutdown E1 interface

Steps	Commands	Description
1	config	Enter global configuration mode

2	slot 0	Enter slot mode
3	interface e1 <1-16>	Enter E1 interface configuration mode
4	[no] shutdown	Open or shutdown E1 interface
5	show interface	Show interface configuration

All interfaces are open by default.

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface e1 1**

Raisecom(config-e1/0/1)# **shutdown**

Set successfully

Raisecom(config-e1/0/1)#

4.5 Monitor and maintenance of E1 interface

Use the command of **show interface** under interface e1 mode can view E1 current status and configuration.

Raisecom(config-e1/0/1)# **show interface**

Interface ID: 1

Interface Descr: slot0-e1-1

PortSendcode: e1NRZ

Interface type: balance

LoopbackConfig config: no Loopback

LoopbackConfig status: no Loopback

Alarm mask config: none

Alarm mask status: LOMF CRCER

Frame mode config: framed

Frame mode status: framed

PCM mode config: PCM31

PCM mode status: PCM31

LineStatus: LOS LOF

Bert config: disable

Bert status: disable

Raisecom(config-e1/0/1)#

Use the command of **show statistic** in interface e1 mode can show current statistic data of E1

interface.

Raisecom(config-e1/0/1)# **show statistic**

Interface ID :1

Descr :slot0-e1-1

Error Seconds :0

Severe Error Seconds :0

Unavailable Seconds :0

Raisecom(config-e1/0/1)#

Chapter 5 Ethernet Interface Configuration

- ✧ Open the interface ([no] shutdown)
- ✧ Shutdown the interface (shutdown)
- ✧ Set Auto-Negotiation function ([no] autonegotiate)
- ✧ Set the rate and duplex mode (speed (10|100) duplex (full-duplex|half-duplex))
- ✧ Set the flow control function (flow-control (on|off))
- ✧ Clear statistic function setting (clear statistic)
- ✧ Auto-MDI function setting ([no] automdi)
- ✧ Laser auto-shutdown function (als (enable | disable))
- ✧ Set the maximal frame length (max-frame-length <64-12000>)
- ✧ Monitor and maintenance of Ethernet interface

5.1 Open the interface

All interfaces are enabled by default. Users need to configure the interface enable or disable for some certain purpose to shutdown physical interface.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface e1 <1-3> interface fx-eth 1	Enter eth configuration mode or fx-eth configuration mode
4	[no] shutdown	Open or shutdown E1 interface
5	show interface	Show interface configuration

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface fx-eth 1**

Raisecom(config-fx-eth/0/1)# **no shutdown**

Set successfully

Raisecom(config-fx-eth/0/1)#

5.2 Shutdown the interface

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode

3	interface eth <1-3>	Enter eth configuration mode or
	interface fx-eth 1	fx-eth configuration mode
4	shutdown	Shutdown Ethernet interface
5	show interface	Show interface configuration

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eth 1**

Raisecom(config-eth/0/1)# **shutdown**

Set successfully

Raisecom(config-eth/0/1)#

5.3 Set Auto-Negotiation function

The rate and duplex can not be configured in Auto-Negotiation mode. All interfaces are Auto-Negotiation by default.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface eth <1-3>	Enter eth configuration mode
4	autonegotiate	Set Auto-Negotiation for Ethernet interface
5	show interface	Show interface configuration

Use **no autonegotiate** command can shutdown Auto-Negotiation function.

Set Auto-Negotiation:

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eth 1**

Raisecom(config-eth/0/1)# **autonegotiate**

Set successfully

Raisecom(config-eth/0/1)#

5.4 Set the rate and duplex mode

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface eth <1-3>	Enter eth configuration mode
4	speed (10/100) duplex (full-duplex/half-duplex)	Set working rate and duplex mode for Ethernet interface
5	show interface	Show interface configuration

This command can be used to configure rate and duplex mode for Ethernet interface in condition that Auto-Negotiation function disable.

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eth 1**

Raisecom(config-eth/0/1)# **speed 100 duplex full-duplex**

Set successfully

Raisecom(config-eth/0/1)#

5.5 Set the flow control function

The flow status of receiving and transmitting direction of the interface is controlled at the same time, that means, flow control enable/disable of the two directions at the same time. Flow control enable by default.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface eth <1-3>, interface fx-eth 1	Enter eth configuration mode or fx-eth configuration mode
4	flow-control (on/off)	Set flow control mode
5	show interface	Show interface configuration

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eth 1**

Raisecom(config-eth/0/1)# **flow-control on**

Set successfully

Raisecom(config-eth/0/1)#

5.6 Clear statistic function setting

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface eth <1-3>, interface fx-eth 1	Enter eth configuration mode or fx-eth configuration mode
4	clear statistic	Clear the statistic of the interface counter
5	show interface	Show interface configuration

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eth 1**

Raisecom(config-eth/0/1)# **clear statistic**

Set successfully

Raisecom(config-eth/0/1)#

5.7 Auto-MDI function setting

Auto-MDIX function can make Ethernet interface Auto-sensing pin arrangement of network cable. This function is disabled by default.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface eth <1-3>	Enter eth configuration mode
4	[no] automdi	Set Auto-MDIX function for Ethernet interface
5	show interface	Show interface configuration

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eth 1**

Raisecom(config-eth/0/1)# **automdi**

Set successfully

Raisecom(config-eth/0/1)#

5.8 Laser auto-shutdown function

ALS enable by default. When laser transmission is disabled, ALS is not available and if ALS function enable, this command will shutdown TX when there is RXLOS after enabling laser transmission function, and the TX will be turned on when RXLOS disappears.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface fx-eth 1	Enter fx-eth configuration mode
4	als (enable / disable)	Set laser auto-shutdown function for optical interface
5	show interface	Show interface configuration

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface fx-eth 1**

Raisecom(config-fx-eth/0/1)# **als enable**

Set successfully

Raisecom(config-fx-eth/0/1)#

5.9 Set the maximal frame length

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface eth <1-3>, interface fx-eth 1	Enter eth configuration mode or fx-eth configuration mode
4	max-frame-length <64-12000>	Set the maximal frame length for optical interface
5	show interface	Show interface configuration

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eth 1**

Raisecom(config-eth/0/1)# **max-frame-length 1916**

Set successfully

Raisecom(config-eth/0/1)#

5.10 Monitor and maintenance of Ethernet interface

Use the command of **show interface** in interface eth configuration mode can view current status and configuration of Ethernet interface:

Raisecom(config-eth/0/1)# **show interface**

```
Interface ID :1
Descr :Slot 0 eth interface 1
Interface type :electrical
Port enable(command) :enable
Port enable status :enable
AutoMdi config :enable
AutoMdi status :enable
Link status :cross
Autonego config :enable
Autonego status :enable
Autonego work status :success
Duplex config :full-duplex
Duplex config status :half-duplex
Duplex status :half-duplex
Speed config :100M
Speed config status :10M
Speed status :10M
Flow control config:on
Flow control status:on
Link :linkdown
MaxFrameLength config :1916
MaxFrameLength status :1916
```

Use the command **show interface** in interface fx-eth configuration mode can view current status and configuration of optical interface:

Raisecom(config-fx-eth/0/1)# **show interface**

```
Interface ID :1
Descr :Slot 0 fx-eth interface 1
Interface type :optical
Port enable(command) :enable
Port enable status :enable
Flow control config:on
Flow control status:on
```


Tlink :linkdown

Rlink :linkup

Als config:enable

Als status:enable

MaxFrameLength config :1916

MaxFrameLength status :1916

Use the command of **show statistic** in interface eth and interface fx-eth configuration mode can show current statistic data of the electrical or optical interface:

Raisecom(config-fx-eth/0/1)# **show statistic**

Interface ID :1

Descr :Slot 0 fx-eth interface 1

OutOctets :0

OutUcastPkts :0

OutDiscards :0

OutErrors :0

OutBroadcastPkts :0

OutMulticastPkts :0

InOctets :0

InUcastPkts :0

InDiscards :0

InErrors :0

InBroadcastPkts :0

InMulticastPkts :0

Chapter 6 SFP Interface Configuration

- ✧ Laser transmission enable/disable
- ✧ Monitor and maintenance of SFP interface

6.1 Laser transmission enable/disable

SFP transmission enable by default.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface fx-eth 1	Enter SFP interface configuration mode
4	sfp-switch (<i>on / off</i>)	Enable/disable SFP transmission function
5	show interface	Show interface configuration

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface sfp fx-eth 1**

Raisecom(config-sfp-fx-eth/0/1)# **sfp-switch on**

setup successfully!

Raisecom(config-sfp-fx-eth/0/1)#

6.2 Monitor and maintenance of SFP interface

Use the command of **show interface** in interface sfp fx-eth mode can view current status and configuration of SFP interface.

Raisecom(config-sfp-fx-eth/0/1)# **show interface**

Sfp Exist :exist

Sfp Tx status :enable

Sfp Rx :LOS

Laser Tx :Fault

Media type :fiber_9_125

Module type :sfp

Optical Interface :LC

Rated speed :1250M

Transmit distance :30 km

Wave length :1310 nm

Product Type :RTXM191C

Version :000

Water Mask :I020152

Chapter 7 EOPDH Interface Configuration

- ✧ Add e1 (add e1 {1-16})
- ✧ Delete e1 (delete e1 {1-16})
- ✧ Clear performance statistic (clear statistic)
- ✧ Set CSF mode (csf (enable|disable))
- ✧ Set FCS mode (gfp-fcs (enable|disable))
- ✧ Set LCAS mode (lcas (on|off))
- ✧ Monitor and maintenance of EOPIF interface

7.1 Add e1

Add an assigned e1 to EOPDH interface as one member of the interface.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface eopif 1	Enter EOPIF configuration mode
4	add e1 {1-16}	Add e1
5	show interface	Show interface configuration

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eopif 1**

Raisecom(config-eopdh/0/1)# **add e1 1-16**

Set successfully

Raisecom(config-eopdh/0/1)#

7.2 Delete e1

Delete an assigned e1 member from EOPDH interface.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface eopif 1	Enter EOPIF configuration mode
4	delete e1 {1-16}	Delete e1

5	show interface	Show interface configuration
---	----------------	------------------------------

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eopif 1**

Raisecom(config-eopdh/0/1)# **delete e1 1-16**

Set successfully

Raisecom(config-eopdh/0/1)#

7.3 Clear performance statistic

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface eopif 1	Enter EOPIF configuration mode
4	clear statistic	Clear performance statistic
5	show interface	Show interface configuration

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eopif 1**

Raisecom(config-eopdh/0/1)# **clear statistic**

Set successfully

Raisecom(config-eopdh/0/1)#

7.4 Set CSF mode

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface eopif 1	Enter EOPIF configuration mode
4	csf (enable/disable)	Set CSF mode
5	show interface	Show interface configuration

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eopif 1**

Raisecom(config-eopdh/0/1)# **csf enable**

Set successfully

Raisecom(config-eopdh/0/1)#

7.5 Set FCS mode

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface eopif 1	Enter EOPIF configuration mode
4	gfp-fcs (enable/disable)	Set FCS mode
5	show interface	Show interface configuration

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eopif 1**

Raisecom(config-eopdh/0/1)# **gfp-fcs enable**

Set successfully

Raisecom(config-eopdh/0/1)#

7.6 Set LCAS mode

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	interface eopif 1	Enter EOPIF configuration mode
4	lcas (on/off)	Set LCAS mode
5	show interface	Show interface configuration

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

```

Raisecom(config)# slot 0

Raisecom(config-slot/0)# interface eopif 1

Raisecom(config-eopdh/0/1)# lcas on

Set successfully

Raisecom(config-eopdh/0/1)#

```

7.7 Monitor and maintenance of EOPIF interface

Use the command of **show interface** in interface EOPIF mode can view current status and configuration of EOPIF interface.

```
Raisecom(config-eopdh/0/1)# show interface
```

```

Interface ID :1

VCG ErrorStatus :

Normal

LCAS mode config :enable

LCAS mode config status:disable

Encapstype config :GFP

Encapstype config status:GFP

FCS mode config :FCS

FCS mode config status:NOFCS

Provisioned size rx:16

Actual size rx:16

Provisioned size tx:16

Actual size tx:16

CSF config :enable

CSF config status :disable

Member Info :

```

Config	Status	Rx	Tx	Error
1	1	FAIL	OK	LOM
2	2	FAIL	OK	LOM
3	3	FAIL	OK	LOM
4	4	FAIL	OK	LOM
5	5	FAIL	OK	LOM
6	6	FAIL	OK	LOM
7	7	FAIL	OK	LOM
8	8	FAIL	OK	LOM
9	9	FAIL	OK	LOM
10	10	FAIL	OK	LOM

11	11	FAIL	OK	LOM
12	12	FAIL	OK	LOM
13	13	FAIL	OK	LOM
14	14	FAIL	OK	LOM
15	15	FAIL	OK	LOM
16	16	FAIL	OK	LOM

Use the command **show statistic** in interface EOPIF mode can show current statistic data of the interface.

Raisecom(config-eopdh/0/1)# **show statistic**

```
Interface ID :1
Rx user bytes:0
Rx user frames:0
Rx ctrl&mgmt frames:0
Tx user bytes:0
Tx user frames:0
Tx ctrl&mgmt frames:0
cHec error frames:0
tHes error frames:0
FCS error frames:0
Type header mismatch frames:0
Exceed max PDU frames:0
```


Chapter 8 Transmission mode Configuration

- ✧ Forward mode configuration
- ✧ Set outside tag
- ✧ Add forward entry rule in vlan-unaware mode
- ✧ Add forward entry rule in vlan-aware mode
- ✧ Add forward entry rule in Q-in-Q mode
- ✧ Delete forward entry rule
- ✧ Monitor and maintenance of the forward mode configuration

8.1 Forward mode configuration

RC959-4FE16E1 device must work in one of the below three forward modes:

➤ Vlan-unaware mode

This is a transparent transmission mode from single point to single point for transmitting Ethernet service to EOPDH interface. No matter Ethernet service flow of users is tag or untag message, data flow can transmit by the device without any change.

➤ Vlan-aware mode

In this mode, TPID 0x8100 tag will be recognized and transmitted as vlan in tag from Ethernet interface to EOPDH interface, it can also make tag or unpack tag for the transmitting message.

➤ Q-in-Q mode

This mode is very similar with vlan-aware mode, but the recognized TPID of tag can be set.

Forward entry rule in different mode is not always the same, clear the history rules in the device before configure again to avoid of different meanings.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	forward-mode (vlan-unaware/vlan-aware/q-in-q)	Configure forward mode
4	show interface	Show interface configuration

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **forward-mode** *vlan-unaware*

Set successfully

Raisecom(config-slot/0)#

8.2 Set outside tag

Users can configure TPID of all recognized tag in Q-in-Q forward mode. This function is usually used to pack tag or unpack tag for outside tag message in actual application. This command is only available in Q-in-Q forward mode, in any other forward mode when users execute this command, system will show “*set unsuccessfully*”.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	double-tagging tpid HHHH	Configure outside tag
4	show forward	Show interface configuration

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **forward-mode q-in-q**

Set successfully

Raisecom(config-slot/0)# **double-tagging tpid 0x9100**

Set successfully

Raisecom(config-slot/0)#

8.3 Add forward entry rule in vlan-unaware mode

Users just need to assign the in let interface and out let interface for configuring forward entry rule in vlan-unaware mode. Be noted that forward rule is unidirection, so users need configure two rules to ensure bidirectional message can forward normally.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	forward-entry eth <1-4> to vcg <1-16>	Add forward rule from Ethernet interface to EOPDH interface
4	forward-entry vcg <1-16> to eth <1-4>	Add forward rule from EOPDH interface to Ethernet interface
5	show forward	Show interface configuration

Configure forward rule in vlan-unaware mode to make message transparent transmitting between Ethernet interface 1 and EOPDH interface 1.

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

```

Raisecom(config)# slot 0

Raisecom(config-slot/0)# forward-mode vlan-unaware

Set successfully

Raisecom(config-slot/0)# forward-entry eth 1 to vcg 1

Set successfully

Raisecom(config-slot/0)# forward-entry vcg 1 to eth 1

Set successfully

Raisecom(config-slot/0)#

```

8.4 Add forward entry rule in vlan-aware mode

Forward rules configured in vlan-aware mode is complex, besides assigning in let interface and out let interface, users have to assign tag filter condition and processing operations for message to transmit. The forward rule is unidirectional, users have to configuration at least two rules to ensure bidirectional message can be transmitted normally.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	forward-entry (tagged/ untagged) eth <1-4> to vcg <1-16> [pri <0-7>] vlanid <1-4095> (tag/untag)	Add forward rule from Ethernet interface to EOPDH interface
4	forward-entry (tagged/ untagged) vcg <1-16> to eth <1-4> [pri <0-7>] vlanid <1-4095> (tag/untag)	Add forward rule from EOPDH interface to Ethernet interface
5	show forward	Show interface configuration

Explanations of parameters in the above table:

(tagged/untagged): filter conditions for messages enter the in let interface, receive tag or untag message, discard the message fall short of conditions.

[pri <0-7>]: process the forwarded messages. Assign privilege parameter for tag if the forward message from out let interface is tag. Default to be 0.

vlanid <1-4095>: this parameter is a filter condition when forwarding tag, it indicates the permitted forward tag vlanid, those messages fall short of conditions will be discarded. When forwarding untag message, this is a parameter for processing message, it indicates the added tag vlanid if need to pack tag for untag message.

(tag/untag): this parameter is for processing forwarded message. It indicates the type of message from out let interface is tag or untag. Unpack or pack tag process may need to do with the message.

Configure forward rule in vlan-aware mode to make message of vlan 101 be forwarded between Ethernet interface 1 and EOPDH interface 1. Ethernet interface 1 receives tag and untag message, transmits tag message; EOPDH interface 1 receives and transmits tag message.

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **forward-mode** *vlan-aware*

Set successfully

Raisecom(config-slot/0)# **forward-entry untagged eth 1 to vcg 1 vlanid 101 tag**

Set Successfully.

Raisecom(config-slot/0)# **forward-entry tagged eth 1 to vcg 1 vlanid 101 tag**

Set Successfully.

Raisecom(config-slot/0)# **forward-entry tagged vcg 1 to eth 1 vlanid 101 tag**

Set Successfully.

Raisecom(config-slot/0)#

8.5 Add forward entry rule in Q-in-Q mode

Forward entry rule configuration in Q-in-Q mode is almost the same as in vlan-aware mode, but the operations of recognizing tag and process of tag are according to out side tag of TPID configured in section 8.2.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	forward-entry (<i>tagged/ untagged</i>) eth <i><1-4></i> to vcg <i><1-16></i> [<i>pri <0-7></i>] vlanid <i><1-4095></i> (<i>tag/untag</i>)	Add forward rule from Ethernet interface to EOPDH interface
4	forward-entry (<i>tagged/ untagged</i>) vcg <i><1-16></i> to eth <i><1-4></i> [<i>pri <0-7></i>] vlanid <i><1-4095></i> (<i>tag/untag</i>)	Add forward rule from EOPDH interface to Ethernet interface
5	show forward	Show interface configuration

Configuration forward entry rule in Q-in-Q mode makes message from Ethernet interface 1 to EOPDH interface 1 will be marked with TPID of 0x9100 vlanid for out side tag is 101, the relevant out side tag will be released when forward from EOPDH interface 1 to Ethernet interface 1.

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **forward-mode** *q-in-q*

Set successfully

```
Raisecom(config-slot/0)# double-tagging tpid 0x9100
```

Set successfully

```
Raisecom(config-slot/0)# forward-entry untagged eth 1 to vcg 1 vlanid 101 tag
```

Set Successfully.

```
Raisecom(config-slot/0)# forward-entry tagged eth 1 to vcg 1 vlanid 101 tag
```

Set Successfully.

```
Raisecom(config-slot/0)# forward-entry tagged vcg 1 to eth 1 vlanid 101 tag
```

Set Successfully.

```
Raisecom(config-slot/0)#
```

8.6 Delete forward entry rule

Users can delete rules according to index or according to interface number. When deleting according to interface number, there is no differentiate in direction, that is, assign one pair of interface as Ethernet interface a and EOPDH interface b, system will delete all rules from a to b and from b to a.

Steps	Commands	Description
1	config	Enter global configuration mode
2	slot 0	Enter slot mode
3	no forward-entry index {1-32} no forward-entry eth <1-4> vcg <1-16>	Delete forward rule
4	show forward	Show interface configuration

```
Raisecom#
```

```
Raisecom# config
```

Configuration mode, one command input per time. End with CTRL-Z.

```
Raisecom(config)# slot 0
```

```
Raisecom(config-slot/0)# show forward
```

Config Info:

Forward Mode:vlan-unaware

Index eth vcg Direction

1 1 1 eth->vcg

2 1 1 vcg->eth

Running Info:

Forward Mode:vlan-unaware

Index eth vcg Direction

```

1      1      1      eth->vcg
2      1      1      vcg->eth

```

Raisecom(config-slot/0)# **show forward**

Config Info:

Forward Mode:vlan-unaware

Index eth vcg Direction

Running Info:

Forward Mode:vlan-unaware

Index eth vcg Direction

Raisecom(config-slot/0)#

8.7 Monitor and maintenance of the forward mode configuration

Use the command of **show forward** in slot mode can view all forward configuration at present:

Raisecom(config-slot/0)# **show forward**

Config Info:

Forward Mode:vlan-unaware

Index eth vcg Direction

```

1      2      2      eth->vcg
2      1      1      vcg->eth
3      1      1      eth->vcg
4      2      2      vcg->eth

```

Running Info:

Forward Mode:vlan-unaware

Index eth vcg Direction

```

1      2      2      eth->vcg
2      1      1      vcg->eth
3      1      1      eth->vcg
4      2      2      vcg->eth

```

Users can also view bidirectional forward rules between specified Ethernet interface and EOPDH interface as the below example shows:

Raisecom(config-slot/0)# **show forward-entry eth 1 vcg 1**

Config Info:

Forward Mode:vlan-unaware

Index eth vcg Direction

2 1 1 vcg->eth

3 1 1 eth->vcg

Running Info:

Forward Mode:vlan-unaware

Index eth vcg Direction

2 1 1 vcg->eth

3 1 1 eth->vcg

Chapter 9 Network Protocol Configuration

- ✧ ARP configuration
- ✧ Route configuration
- ✧ SNMP configuration
- ✧ Device status and configuration

9.1 ARP configuration

- Add ARP
- Delete ARP

9.1.1 Add ARP

Steps	Commands	Description
1	config	Enter global configuration mode
2	arp add A.B.C.D MACADDRESS	Configure IP address map to physical address
3	show arp	Delete forward rule

Raisecom #**config**

Raisecom (config)# **arp add 192.168.4.28 00:00:01:02:03:04**

Successfully add an entry to ARP table

Raisecom (config)# **show arp**

LINK LEVEL ARP TABLE

<i>destination</i>	<i>mac-addr</i>	<i>flags(0x)Rfc</i>	<i>Use</i>	<i>Interface</i>

<i>192.168.4.28</i>	<i>00:00:01:02:03:04</i>	<i>2200c05 0 0</i>		<i>lo0</i>

Raisecom (config)#

9.1.2 Delete ARP

Steps	Commands	Description
1	config	Enter global configuration mode
2	arp add A.B.C.D	Configure IP address map to physical address
3	show arp	Delete forward rule

Raisecom #**config**

Raisecom (config)# **arp delete 192.168.4.28**

Successfully delete an entry from ARP table

Raisecom (config)# **show arp**

LINK LEVEL ARP TABLE

<i>destination</i>	<i>mac-addr</i>	<i>flags(0x)Rfc</i>	<i>Use</i>	<i>Interface</i>

Raisecom (config)#

9.2 Route configuration

- Add a route
- Delete a route

9.2.1 Add a route

Steps	Commands	Description
1	config	Enter global configuration mode
		Add a route.
		<i>A.B.C.D</i> : The first parameter is sub-net of destination network or host IP, it is in decimal format.
2	ip route <i>A.B.C.D A.B.C.D A.B.C.D</i>	<i>A.B.C.D</i> : The second parameter is sub-net of destination network or sub-net mask of host IP, it is in decimal format.
		<i>A.B.C.D</i> : The third parameter is gateway IP, it is in decimal format.
3	Show ip route	Delete route information

Raisecom #**config**

Raisecom (config)# **ip route** *192.168.6.0 255.255.255.0 192.168.4.28*

Successfully add a route

Raisecom (config)# **show ip route**

ROUTE NET TABLE

<i>destination</i>	<i>gateway</i>	<i>flags(0x)Rfc</i>	<i>Use</i>	<i>pro</i>	<i>Interface</i>

<i>192.168.4.0/24</i>	<i>192.168.4.28</i>	<i>2010101</i>	<i>0</i>	<i>0</i>	<i>1 motfec0</i>
<i>192.168.5.0/24</i>	<i>192.168.5.20</i>	<i>2000101</i>	<i>0</i>	<i>0</i>	<i>2 motfek0</i>
<i>192.168.6.0/24</i>	<i>192.168.4.28</i>	<i>2010101</i>	<i>0</i>	<i>0</i>	<i>1 motfec0</i>

ROUTE HOST TABLE

<i>destination</i>	<i>gateway</i>	<i>flags(0x)Rfc</i>	<i>Use</i>	<i>pro</i>	<i>Interface</i>

```
127.0.0.1      127.0.0.1      2200005  0    0      2    lo0
```

```
Raisecom (config)#
```

9.2.2 Deleted a route

Steps	Commands	Description
1	config	Enter global configuration mode
2	ip route A.B.C.D A.B.C.D	Add a route. A.B.C.D : The first parameter is sub-net of destination network or host IP, it is in decimal format. A.B.C.D: The second parameter is sub-net of destination network or sub-net mask of host IP, it is in decimal format.
3	Show ip route	Delete route information

```
Raisecom #config
```

```
Raisecom (config)# no ip route 192.168.6.0 255.255.255.0
```

Successfully delete a route

```
Raisecom (config)# show ip route
```

```
ROUTE NET TABLE
```

```
destination      gateway          flags(0x)Rfc  Use      pro Interface
```

```
192.168.4.0/24    192.168.4.28    2010101  0    0      1    motfec0
```

```
192.168.5.0/24    192.168.5.20    2000101  0    0      2    motfek0
```

```
ROUTE HOST TABLE
```

```
destination      gateway          flags(0x)Rfc  Use      pro Interface
```

```
127.0.0.1      127.0.0.1      2200005  0    0      2    lo0
```

```
Raisecom (config)#
```

9.3 SNMP configuration

- Configure a SNMP server community
- Configure a SNMP trap server
- Delete a SNMP trap server
- Enable SNMP task
- Disable SNMP task
- Configure interface IP address of SNMP

9.3.1 Configure a SNMP server community

Steps	Commands	Description
1	config	Enter global configuration mode
2	Snmp-server community <i>COMMUNITY (ro/rw)</i>	Configure read only community and write community
3	show snmp-server community	Show SNMP configuration information

Raisecom #**config**

Raisecom (config)# **snmp-server community** *public ro*

Set successfully

Raisecom (config)# **show snmp-server community**

9.3.2 Configure a SNMP trap server

Steps	Commands	Description
	config	Enter global configuration mode
1.	snmp trap-server <i>A.B.C.D [<1-65535>]</i>	Set SNMP trap MANAGER. <i>A.B.C.D</i> : IP address of trap manager; <i>[<1-65535>]</i> : trap manager alarm receiving port
2.	show snmp trap-server	Show SNMP configuration information

Raisecom #**config**

Raisecom (config)# **snmp trap-server** *192.168.1.1 162*

Set successfully

Raisecom (config)# **show snmp trap-server**

9.3.3 Delete a SNMP trap server

Steps	Commands	Description
1	config	Enter global configuration mode
2	snmp trap-server <i>A.B.C.D</i>	Delete TRAP MANAGER
3	show snmp	Show SNMP configuration information

Raisecom #**config**

Raisecom (config)# **no snmp trap-server** *192.168.1.1*

Set successfully

Raisecom (config)# **show snmp trap-server**

9.3.4 Enable SNMP task

Steps	Commands	Description
1	config	Enter global configuration mode
2	snmpd	Enable SNMP task

Raisecom **#config**

Raisecom (config) **# snmpd**

Set successfully

Raisecom (config) **#**

9.3.5 Disable SNMP task

Steps	Commands	Description
1	config	Enter global configuration mode
2	no snmpd	Disable SNMP task

Raisecom **#config**

Raisecom (config) **# no snmpd**

Set successfully

Raisecom (config) **#**

9.3.6 Configure interface IP address of SNMP

Steps	Commands	Description
1	config	Enter global configuration mode
2	interface snmp	Enter local SNMP configuration mode of RC959-4FE16E1
3	ip address A.B.C.D [A.B.C.D]	Modify IP and mask. A.B.C.D: set IP address; [A.B.C.D]: set IP mask, can leave be default
4	show interface snmp	Show interface SNMP configuration information

Raisecom **# config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config) **# interface snmp**

Raisecom (config-snmp) **# ip address 192.168.4.29 255.255.255.0**

Set successfully

Raisecom (config-snmp) **# show int**

Raisecom (config-snmp) **# show interface snmp**

Interface:snmp

Administration Status :up Operation Status :down

Description: snmp

Internet address: 192.168.4.29 Netmask: 255.255.255.0

Ethernet address: 00:00:01:02:03:04

Duplex:half-duplex Speed:100baseT

Autonegotiation:enable

Raisecom (config-snmp)#

9.4 Device status and configuration

Users can view current status and configuration of SNMP COMMUNITY by the command of **show snmp-server community** in USER EXEC mode.

Steps	Commands	Description
1	config	Enter global configuration mode
2	show snmp-server community	Show SNMP community configuration information

Raisecom #**config**

Raisecom (config)# **show snmp-server community**

```

ID      COMMUNITYNAME      RIGHT
-----
1      private              rw
2      public               ro

```

Raisecom (config)#

Users can view current status and configuration of SNMP trap-server by the command of **show snmp trap-server** in USER EXEC mode.

Steps	Commands	Description
	config	Enter global configuration mode
2	show snmp trap-server	Show SNMP trap-server configuration information

Raisecom #**config**

Raisecom (config)# **show snmp trap-server**

```

Trap server:
ADDRESS      PORT
-----

```

Raisecom (config)#

Users can view current status and configuration of SNMP by the command of **show interface snmp** in SNMP configuration mode.

Steps	Commands	Description
	config	Enter global configuration mode
3.	interface snmp	Enter SNMP configuration mode
4.	show interface snmp	

Raisecom #**config**

Raisecom (config)# **interface snmp**

Raisecom (config-snmp)# **show interface snmp**

Interface:snmp

Administration Status :up Operation Status :down

Description: snmp

Internet address: 192.168.4.28 Netmask: 255.255.255.0

Ethernet address: 00:00:01:02:03:04

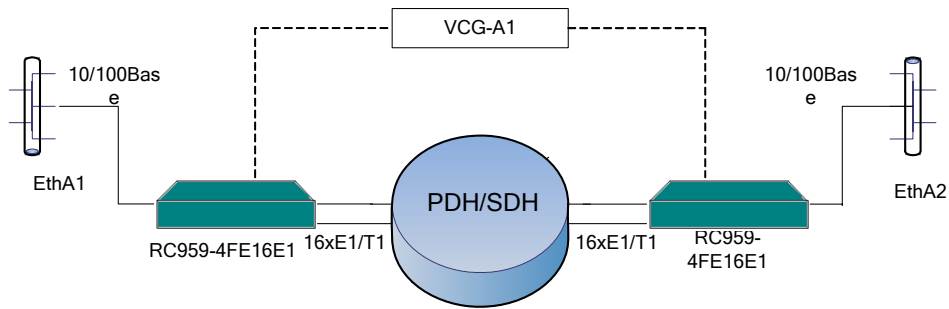
Duplex:half-duplex Speed:100baseT

Autonegotiation:enable

Raisecom (config-snmp)#

Chapter 10 Typical Applications

10.1 Typical application of vlan-unaware



Deployment application:

16 lines of E1 of two RC959-4FE16E1 connected by PDH/SDH transmission network, each device enable one Ethernet interface, the data is transparent transmitted between the two devices.

Configuration procedure:

Here we take the device on the left for example, the device on the right can configure as this.

1) Setting IP address

```
Raisecom#
```

```
Raisecom# config
```

Configuration mode, one command input per time. End with CTRL-Z.

```
Raisecom(config)# interface snmp
```

```
Raisecom(config-snmp)# ip address 192.168.12.90 255.255.255.0
```

Set successfully

```
Raisecom(config-snmp)# show interface snmp
```

```
Interface:snmp
```

```
Administration Status : up    Operation Status : up
```

```
Description: snmp
```

```
Internet address: 192.168.12.90    Netmask: 255.255.255.0
```

```
Ethernet address: 00:00:01:02:03:04
```

```
Duplex:full-duplex    Speed:100baseT
```

```
Autonegotiation:enable
```

```
Raisecom(config-snmp)# end
```

```
Raisecom# write
```

Are you sure[Y/N]:y

Please wait..Copy OK: 2561 bytes copied

Save current configuration successfully!

Raisecom#

2) Setting SNMP community and TRAP MANAGER address

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **snmp-server community** *public ro*

Set successfully

Raisecom(config)# **snmp-server community** *private rw*

Set successfully

Raisecom(config)# **show snmp**

snmp-server snmp

Raisecom(config)# **show snmp-server community**

<i>ID</i>	<i>COMMUNITYNAME</i>	<i>RIGHT</i>

<i>1</i>	<i>public</i>	<i>ro</i>
<i>2</i>	<i>private</i>	<i>rw</i>

Raisecom(config)#

Raisecom(config)# **snmp trap-server** *192.168.12.89 162*

Set successfully

Raisecom(config)# **show snmp trap-server**

Trap server:

<i>ADDRESS</i>	<i>PORT</i>

<i>192.168.12.89</i>	<i>162</i>

Raisecom(config)# **end**

Raisecom# **wr**

Raisecom# **write**

Are you sure[Y/N]:y

Please wait..Copy OK: 2669 bytes copied

Save current configuration successfully!

Raisecom#

3) Setting property of Ethernet interface 1

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eth 1**

Raisecom(config-eth/0/1)# **autonegotiate**

Set successfully

Raisecom(config-eth/0/1)# **flow-control on**

Set successfully

Raisecom(config-eth/0/1)# **show interface**

Interface ID :1

Descr :Slot 0 eth interface 1

Interface type :electrical

Port enable(command) :enable

Port enable status :enable

AutoMdi config :enable

AutoMdi status :enable

Link status :direct

Autonego config :enable

Autonego status :enable

Autonego work status :success

Duplex config :full-duplex

Duplex config status :half-duplex

Duplex status :half-duplex

Speed config :100M

Speed config status :10M

Speed status :10M

Flow control config:on

Flow control status:on

Link :linkdown

MaxFrameLength config :1916

MaxFrameLength status :1916

Raisecom(config-eth/0/1)# **end**

Raisecom# **write**

Are you sure[Y/N]:y

Please wait..Copy OK: 2669 bytes copied

Save current configuration successfully!

Raisecom#

4) Setting property of EOPDH interface 1

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **interface eopif 1**

Raisecom(config-eopdh/0/1)# **lcas on**

Set successfully

Raisecom(config-eopdh/0/1)# **add e1 1-16**

Set successfully

Raisecom(config-eopdh/0/1)# **show interface**

Interface ID :1

VCG ErrorStatus :

Normal

LCAS mode config :enable

LCAS mode config status:enable

Encapstype config :GFP

Encapstype config status:GFP

FCS mode config :NOFCS

FCS mode config status:NOFCS

Provisioned size rx:16

Actual size rx:16

Provisioned size tx:16

Actual size tx:16

CSF config :disable

CSF config status :disable

Member Info :

<i>Config</i>	<i>Status</i>	<i>Rx</i>	<i>Tx</i>	<i>Error</i>
<i>1</i>	<i>1</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>2</i>	<i>2</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>3</i>	<i>3</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>4</i>	<i>4</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>5</i>	<i>5</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>6</i>	<i>6</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>7</i>	<i>7</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>8</i>	<i>8</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>9</i>	<i>9</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>10</i>	<i>10</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>11</i>	<i>11</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>12</i>	<i>12</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>13</i>	<i>13</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>14</i>	<i>14</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>15</i>	<i>15</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>
<i>16</i>	<i>16</i>	<i>FAIL</i>	<i>OK</i>	<i>LOM</i>

Raisecom(config-eopdh/0/1)# **end**

Raisecom# **write**

Are you sure[Y/N]:y

Please wait..Copy OK: 2715 bytes copied

Save current configuration successfully!

Raisecom#

LCAS mode configuration should be taken before add e1. Users can modify LCAS mode of those EOPDH interface without add e1; for those EOPDH interfaces have already finished adding e1, it is better for users to save configuration and reboot device after modify LCAS mode, otherwise the data line may occurs malfunction.

5) Setting forward entry

Raisecom#

Raisecom# **config**

Configuration mode, one command input per time. End with CTRL-Z.

Raisecom(config)# **slot 0**

Raisecom(config-slot/0)# **forward-mode** *vlan-unaware*

Set successfully

Raisecom(config-slot/0)# **forward-entry** **eth 1** to **vcg 1**

Set successfully

Raisecom(config-slot/0)# **forward-entry** **vcg 1** to **eth 1**

Set successfully

Raisecom(config-slot/0)# **show forward**

Config Info:

Forward Mode:vlan-unaware

Index eth vcg Direction

<i>1</i>	<i>1</i>	<i>1</i>	<i>eth->vcg</i>
----------	----------	----------	--------------------

<i>2</i>	<i>1</i>	<i>1</i>	<i>vcg->eth</i>
----------	----------	----------	--------------------

Running Info:

Forward Mode:vlan-unaware

Index eth vcg Direction

<i>1</i>	<i>1</i>	<i>1</i>	<i>eth->vcg</i>
----------	----------	----------	--------------------

<i>2</i>	<i>1</i>	<i>1</i>	<i>vcg->eth</i>
----------	----------	----------	--------------------

Raisecom(config-slot/0)# **end**

Raisecom# **write**

Are you sure[Y/N]:y

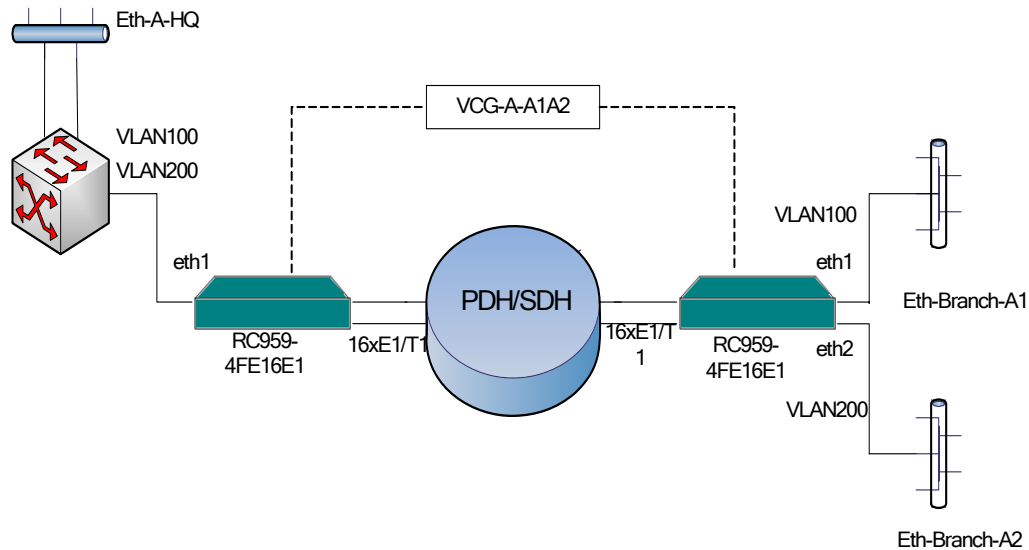
Please wait..Copy OK: 2779 bytes copied

Save current configuration successfully!

Raisecom#

Operations of setting forward mode should be taken before setting forward entry rule. Delete all old rules by manual before modify forward entry mode.

10.2 Typical application of vlan-aware (example 1)



Configuration application:

16 lines of E1 of two RC959-4FE16E1 connected by PDH/SDH transmission network. Ethernet 1 and 2 of the right device access to vlan100 and vlan 200, then uplink to switch by transmission network and Ethernet interface 1 of the left device.

Configuration procedure:

1) Setting IP address

Same as section 10.1

2) Setting SNMP COMMUNITY and TRAP MANAGER address

Same as section 10.1

3) Setting property of Ethernet interface 1

Same as section 10.1

4) Setting property of EOPDH interface 1

Same as section 10.1

5) Setting forward entry

The configuration of left device is same as section 10.1

Configuration of the right device:

```
Raisecom#
```

```
Raisecom# config
```

Configuration mode, one command input per time. End with CTRL-Z.

```
Raisecom(config)# slot 0
```

```
Raisecom(config-slot/0)# forward-mode vlan-aware
```

Set successfully

```
Raisecom(config-slot/0)# forward-entry untagged eth 1 to vcg 1 vlanid 100 tag
```

Set Successfully.

Raisecom(config-slot/0)# **forward-entry tagged eth 1 to vcg 1 vlanid 100 tag**

Set Successfully.

Raisecom(config-slot/0)# **forward-entry tagged vcg 1 to eth 1 vlanid 100 untag**

Set Successfully.

Raisecom(config-slot/0)# **forward-entry untagged eth 2 to vcg 1 vlanid 200 tag**

Set Successfully.

Raisecom(config-slot/0)# **forward-entry tagged eth 2 to vcg 1 vlanid 200 tag**

Set Successfully.

Raisecom(config-slot/0)# **forward-entry tagged vcg 1 to eth 2 vlanid 200 tag**

Set Successfully.

Raisecom(config-slot/0)# **show forward**

Config Info:

Forward Mode:vlan-aware

<i>Index</i>	<i>eth</i>	<i>vcg</i>	<i>Direction</i>	<i>Ingress-type</i>	<i>Egress-type</i>	<i>Vlanid</i>	<i>PRI</i>
--------------	------------	------------	------------------	---------------------	--------------------	---------------	------------

1	1	1	eth->vcg	untagged	tagged	100	0
2	1	1	eth->vcg	tagged	tagged	100	0
3	1	1	vcg->eth	tagged	untagged	100	0
4	2	1	eth->vcg	untagged	tagged	200	0
5	2	1	eth->vcg	tagged	tagged	200	0
6	2	1	vcg->eth	tagged	tagged	200	0

Running Info:

Forward Mode:vlan-aware

<i>Index</i>	<i>eth</i>	<i>vcg</i>	<i>Direction</i>	<i>Ingress-type</i>	<i>Egress-type</i>	<i>Vlanid</i>	<i>PRI</i>
--------------	------------	------------	------------------	---------------------	--------------------	---------------	------------

1	1	1	eth->vcg	untagged	tagged	100	0
2	1	1	eth->vcg	tagged	tagged	100	0
3	1	1	vcg->eth	tagged	untagged	100	0
4	2	1	eth->vcg	untagged	tagged	200	0
5	2	1	eth->vcg	tagged	tagged	200	0
6	2	1	vcg->eth	tagged	tagged	200	0

Raisecom(config-slot/0)# **end**

Raisecom# **write**

Are you sure[Y/N]:y

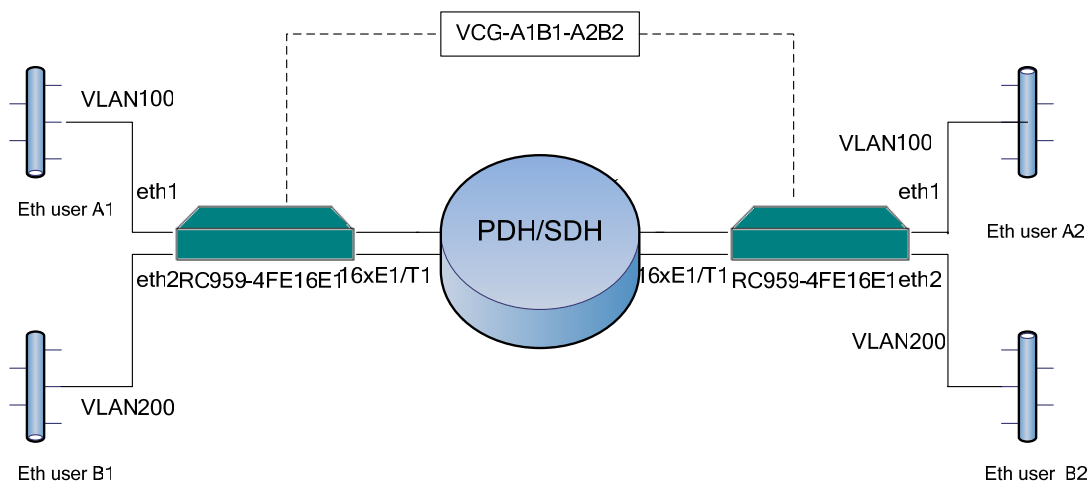
Please wait..Copy OK: 3049 bytes copied

Save current configuration successfully!

Raisecom#

Operations of setting forward mode should be taken before setting forward entry rule. Delete all old rules by manual before modify forward entry mode.

10.3 Typical application of vlan-aware (example 2)



Configuration application:

16 lines of E1 of two RC959-4FE16E1 connected by PDH/SDH transmission network. Ethernet 1 and 2 of the right device access to vlan100 and vlan 200.

Configuration procedure:

1) Setting IP address

Same as section 10.1

2) Setting SNMP COMMUNITY and TRAP MANAGER address

Same as section 10.1

3) Setting property of Ethernet interface 1

Same as section 10.1

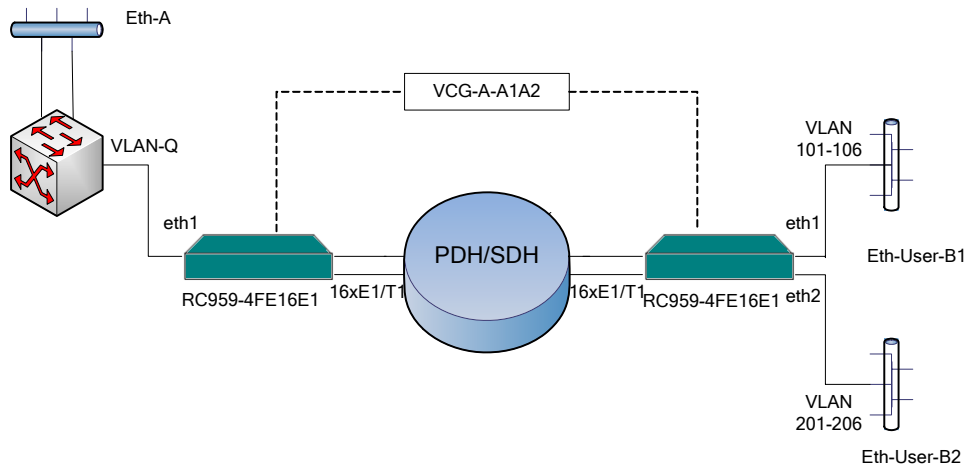
4) Setting property of EOPDH interface 1

Same as section 10.1

5) Setting forward entry

The configuration of the two devices are the same, please refer to configuration of the right device in section 10.2.

10.4 Typical application of Q-in-Q (example 1)



Configuration application:

16 lines of E1 of two RC959-4FE16E1 connected by PDH/SDH transmission network. The left device work under Q-in-Q mode, export Ethernet interface with out side tag Q (TPID is 0x9100, vlanid is 100); the right device work under vlan-aware mode, Ethernet interface 1 and 2 accessing vlan101-106 and vlan201-206 data respectively.

Configuration procedure:

1) Setting IP address

Same as section 10.1

2) Setting SNMP COMMUNITY and TRAP MANAGER address

Same as section 10.1

3) Setting property of Ethernet interface 1

Same as section 10.1

4) Setting property of EOPDH interface 1

Same as section 10.1

5) Setting forward entry

The configuration of right device is same as section 10.2

Configuration of the left device:

```
Raisecom#
```

```
Raisecom# config
```

Configuration mode, one command input per time. End with CTRL-Z.

```
Raisecom(config)# slot 0
```

```
Raisecom(config-slot/0)# forward-mode q-in-q
```

Set successfully

```
Raisecom(config-slot/0)# double-tagging tpid 0x9100
```

Set successfully

Raisecom(config-slot/0)# **forward-entry tagged eth 1 to vcg 1 vlanid 100 untag**

Set Successfully.

Raisecom(config-slot/0)# **forward-entry untagged vcg 1 to eth 1 vlanid 100 tag**

Set Successfully.

Raisecom(config-slot/0)# **show forward**

Config Info:

Forward Mode:q-in-q

TPID :9100

<i>Index</i>	<i>eth</i>	<i>vcg</i>	<i>Direction</i>	<i>Ingress-type</i>	<i>Egress-type</i>	<i>Vlanid</i>	<i>PRI</i>
--------------	------------	------------	------------------	---------------------	--------------------	---------------	------------

<i>1</i>	<i>1</i>	<i>1</i>	<i>vcg->eth</i>	<i>untagged</i>	<i>tagged</i>	<i>100</i>	<i>0</i>
----------	----------	----------	--------------------	-----------------	---------------	------------	----------

<i>7</i>	<i>1</i>	<i>1</i>	<i>eth->vcg</i>	<i>tagged</i>	<i>untagged</i>	<i>100</i>	<i>0</i>
----------	----------	----------	--------------------	---------------	-----------------	------------	----------

Running Info:

Forward Mode:q-in-q

TPID :9100

<i>Index</i>	<i>eth</i>	<i>vcg</i>	<i>Direction</i>	<i>Ingress-type</i>	<i>Egress-type</i>	<i>Vlanid</i>	<i>PRI</i>
--------------	------------	------------	------------------	---------------------	--------------------	---------------	------------

<i>1</i>	<i>1</i>	<i>1</i>	<i>vcg->eth</i>	<i>untagged</i>	<i>tagged</i>	<i>100</i>	<i>0</i>
----------	----------	----------	--------------------	-----------------	---------------	------------	----------

<i>7</i>	<i>1</i>	<i>1</i>	<i>eth->vcg</i>	<i>tagged</i>	<i>untagged</i>	<i>100</i>	<i>0</i>
----------	----------	----------	--------------------	---------------	-----------------	------------	----------

Raisecom(config-slot/0)# **end**

Raisecom# **write**

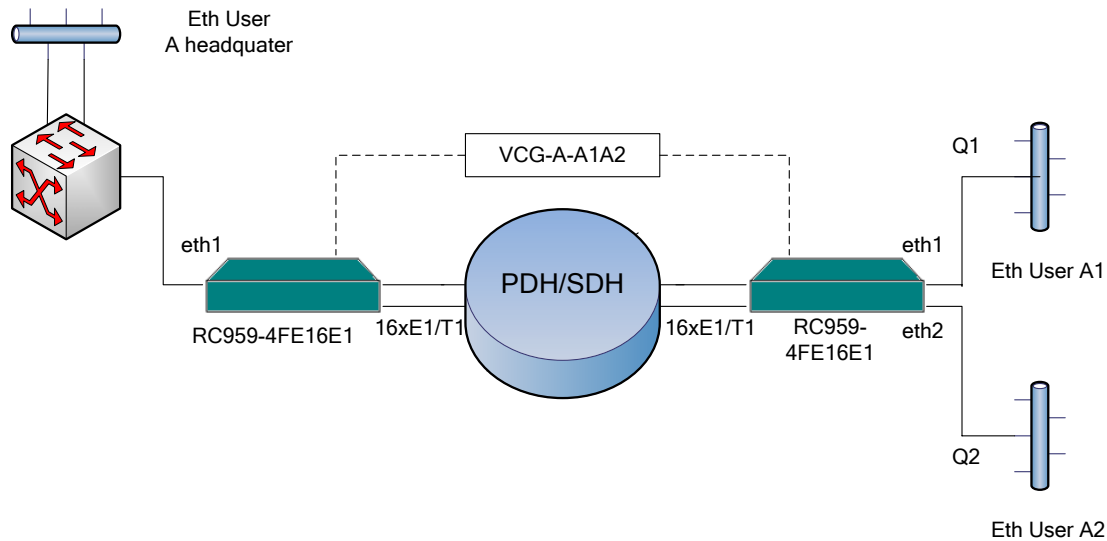
Are you sure[Y/N]:y

Please wait..Copy OK: 2853 bytes copied

Save current configuration successfully!

Raisecom#

10.5 Typical application of Q-in-Q (example 2)



Configuration application:

16 lines of E1 of two RC959-4FE16E1 connected by PDH/SDH transmission network. The left device work under vlan-unaware mode; the right device work under Q-in-Q mode, Ethernet interface 1 and 2 with out side tag Q1 (TPID is 0x9100, vlanid is 100) and Q2 (TPID is 0x9100, vlanid is 200) respectively.

Configuration procedure:

1) Setting IP address

Same as section 10.1

2) Setting SNMP COMMUNITY and TRAP MANAGER address

Same as section 10.1

3) Setting property of Ethernet interface 1

Same as section 10.1

4) Setting property of EOPDH interface 1

Same as section 10.1

5) Setting forward entry

The configuration of left device is same as section 10.1

Configuration of the right device:

```
Raisecom#
```

```
Raisecom# config
```

Configuration mode, one command input per time. End with CTRL-Z.

```
Raisecom(config)# slot 0
```

```
Raisecom(config-slot/0)# forward-mode q-in-q
```

Set successfully

Raisecom(config-slot/0)# **double-tagging tpid 0x9100**

Set successfully

Raisecom(config-slot/0)# **forward-entry untagged eth 1 to vcg 1 vlanid 100 tag**

Set Successfully.

Raisecom(config-slot/0)# **forward-entry tagged vcg 1 to eth 1 vlanid 100 untag**

Set Successfully.

Raisecom(config-slot/0)# **forward-entry untagged eth 2 to vcg 1 vlanid 200 tag**

Set Successfully.

Raisecom(config-slot/0)# **forward-entry tagged vcg 1 to eth 2 vlanid 200 untag**

Set Successfully.

Raisecom(config-slot/0)# **show forward**

Config Info:

Forward Mode:q-in-q

TPID :9100

<i>Index</i>	<i>eth</i>	<i>vcg</i>	<i>Direction</i>	<i>Ingress-type</i>	<i>Egress-type</i>	<i>Vlanid</i>	<i>PRI</i>
--------------	------------	------------	------------------	---------------------	--------------------	---------------	------------

<i>1</i>	<i>1</i>	<i>1</i>	<i>vcg->eth</i>	<i>tagged</i>	<i>untagged</i>	<i>100</i>	<i>0</i>
<i>2</i>	<i>1</i>	<i>1</i>	<i>eth->vcg</i>	<i>untagged</i>	<i>tagged</i>	<i>100</i>	<i>0</i>
<i>3</i>	<i>2</i>	<i>1</i>	<i>eth->vcg</i>	<i>untagged</i>	<i>tagged</i>	<i>200</i>	<i>0</i>
<i>4</i>	<i>2</i>	<i>1</i>	<i>vcg->eth</i>	<i>tagged</i>	<i>untagged</i>	<i>200</i>	<i>0</i>

Running Info:

Forward Mode:q-in-q

TPID :9100

<i>Index</i>	<i>eth</i>	<i>vcg</i>	<i>Direction</i>	<i>Ingress-type</i>	<i>Egress-type</i>	<i>Vlanid</i>	<i>PRI</i>
--------------	------------	------------	------------------	---------------------	--------------------	---------------	------------

<i>1</i>	<i>1</i>	<i>1</i>	<i>vcg->eth</i>	<i>tagged</i>	<i>untagged</i>	<i>100</i>	<i>0</i>
<i>2</i>	<i>1</i>	<i>1</i>	<i>eth->vcg</i>	<i>untagged</i>	<i>tagged</i>	<i>100</i>	<i>0</i>
<i>3</i>	<i>2</i>	<i>1</i>	<i>eth->vcg</i>	<i>untagged</i>	<i>tagged</i>	<i>200</i>	<i>0</i>
<i>4</i>	<i>2</i>	<i>1</i>	<i>vcg->eth</i>	<i>tagged</i>	<i>untagged</i>	<i>200</i>	<i>0</i>

Raisecom(config-slot/0)# **end**

Raisecom# **write**

Are you sure[Y/N]:y

Please wait..Copy OK: 2853 bytes copied

Save current configuration successfully!

Raisecom#



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